

# 4.High Magnetic Permeability Cores for Pulse Transformer

After suitable heat treatment has been done, cobalt base amorphous material shows excellent magnetic properties. TOSHIBA MATERIALS has developed new high permeability core 'FS Series' with this material.

FS series maintain high initial permeability  $\mu_i$  especially at the high frequency zone, and are suitable for Pulse Transformers, Noise Filter and Cores for Sensors. High permeability enables electronic parts to be smaller and have higher performance.

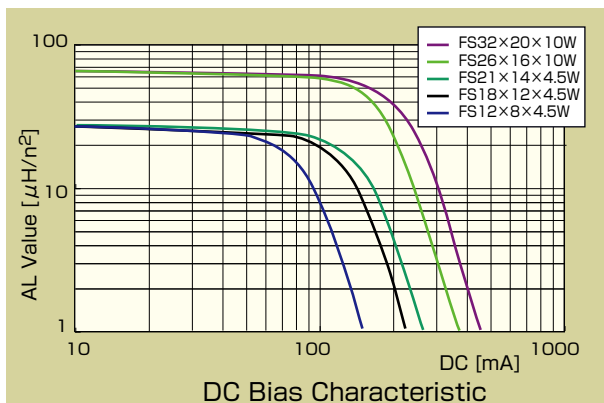
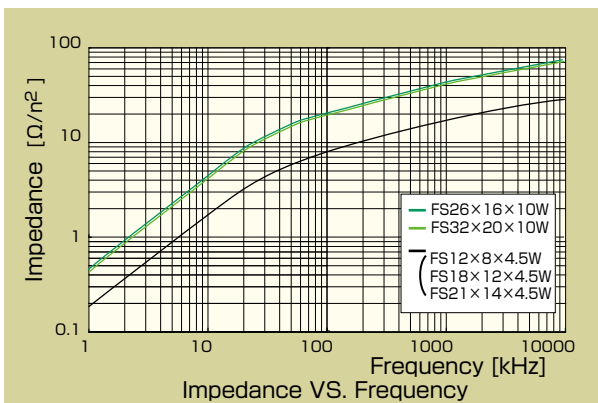
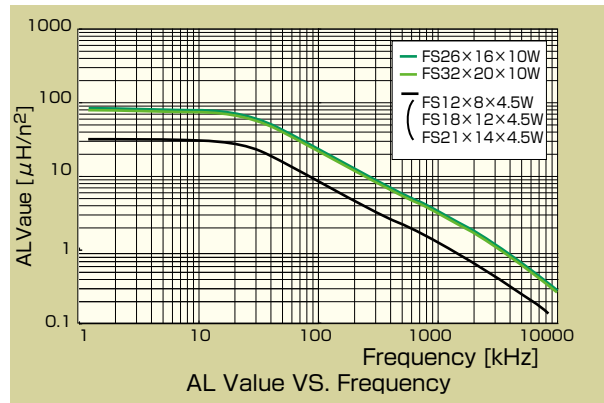
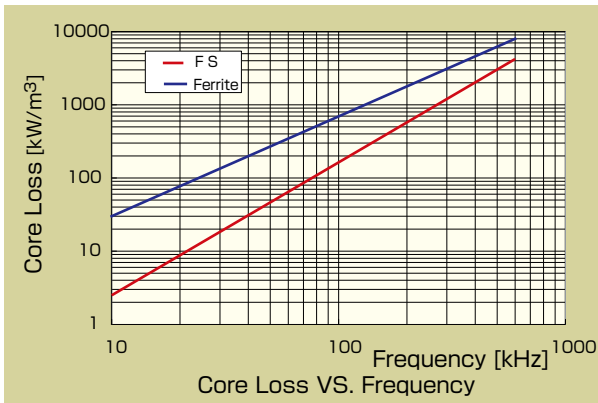
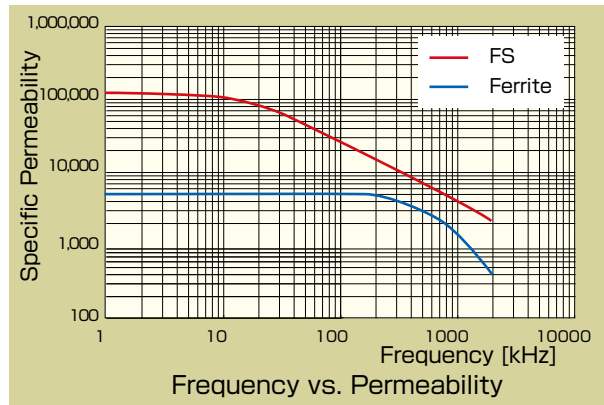
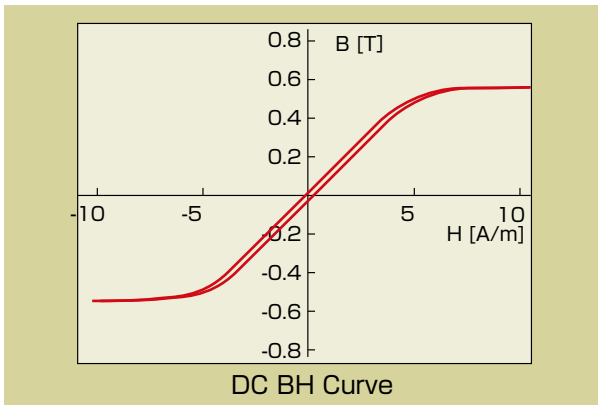
**High Permeability** :  $\mu_i$  at 10kHz is 100,000 it changes inductance module smaller and higher performance.

**Low Loss** : Smaller core loss, higher exchange efficiency, lower self heat of core can be obtained.

**Constant Permeability** : Small permeability change depending on magnetic field.

**Thin and Small Core** : Small miniature core enables to mount in a PC-card.

## Characteristics (Typical Value)



## Standard Specifications

Type No.	Finished Dimensions [mm]			Core Size [mm] * <sup>1</sup>			Effective core cross section Ae [mm <sup>2</sup> ] * <sup>1</sup>	Mean flux path length Lm [mm] * <sup>1</sup>	AL Value [ $\mu\text{H}/\text{n}^2$ ] * <sup>2</sup> * <sup>3</sup>	Insulating Cover * <sup>4</sup>
	O.D.max	I.D.min	H.T.max	O.D.	I.D.	H.T.				
FS12X8X4.5W	14.0	6.6	6.8	12	8	4.5	6.75	31.4	27.0	A
FS18X12X4.5W	20.0	10.6	6.8	18	12	4.5	10.1	47.1	27.0	A
FS21X14X4.5W	23.0	12.6	6.8	21	14	4.5	11.8	55.0	27.0	A
FS26X16X10W	29.5	13.0	13.0	26	16	9.5	35.6	66.0	67.8	B
FS32X20X10W	35.5	17.0	13.0	32	20	9.5	42.8	81.7	65.7	B

Operating temperature has to be less than 85°C (include self rise up)

\*<sup>1</sup> Reference value \*<sup>2</sup> Tolerance $\pm$ 30% \*<sup>3</sup> Measuring Condition : 10kHz,10mA, 1 turn, R.T.

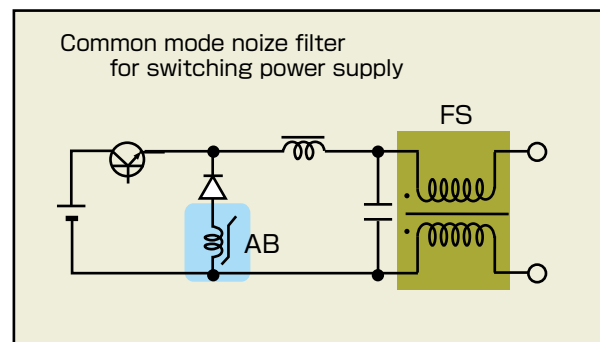
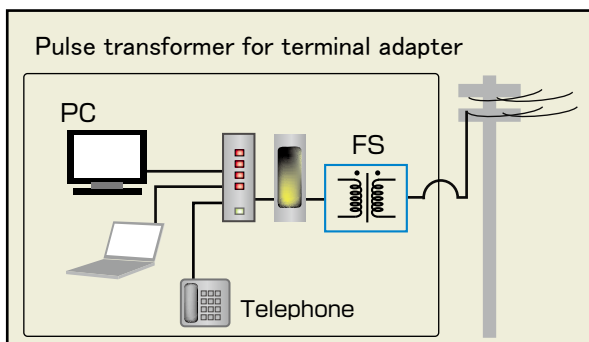
\*<sup>4</sup> Insulating cover made with UL94V-0 Approved Material.

A: PET, B: PBT

Don't hesitate to ask our sales section about other size items.

## Applications

- ☆Magnetic core of pulse transformer  
Communication instrument  
Small size, high density assemble
- ☆Magnetic core for common mode noise filter  
Switching power supply  
Communication and measuring instrument
- ☆Magnetic core for current transformer



# Notices on Handle, Maintenance and Discontinue List

<p>Notices of the amorphous magnetic parts on handle</p> <p>Detail information are described on the technical data sheet or the specification for supply.</p>	
Maximum Operating Temperature	120°C (include temperature rising by self-heating, under natural air cooling) (except FS series which is 85°C)
Wire Winding	Be careful at wire winding or lead insertion. Damage or deformation of the core or insulating cover has a harmful influence. Be careful to the rare short circuit.
Mounting	Make sure not to apply any stresses which will lead to deformation of the core exterior. If the product is to be impregnated, bonded, cleaned or otherwise treated, confirm that such treatment will not adversely affect the magnetic characteristics. When impregnating the core, be sure that the magnetic properties will not be influenced. Prevent radiation and conduction from high temperature components from reaching the core. Be sure to consider vibration and shock when installing these parts.
Soldering	When soldering be sure that the core exterior will not be deformed by heat conducted through the lead wire. Do not subject parts to re-flow or flow soldering. (Except the surface mounting type)
Circuit Design	Be careful, of input voltage, rated current, ambient temperature and temperature rise. When revising the circuit, please recheck the core temperature rise. Recheck the maximum temperature or maximum loads.
Transport and Storage	Do not drop the parts. Protect the parts from water.

## Discontinued List

Discontinued Type No.	Substitution (recommend)
FS10X4X1	(FS12X8X4.5W)
MA7X6X4.5X	(MS10X7X4.5W)
MA8X6X4.5X	(MS10X7X4.5W)
MA10X6X4.5X	(MS10X7X4.5W)
MA14X8X4.5X	MS14X8X4.5W
MA18X12X4.5X	MS18X12X4.5W
MA22X14X4.5W	(MS26X16X4.5W)
MA26X16X4.5W	MS26X16X4.5W
MB8X7X4.5	(MS10X7X4.5W)
MB9X7X4.5	(MS10X7X4.5W)
MB10X7X4.5	MS10X7X4.5W
MB12X8X4.5	MS12X8X4.5W
MB14X8X4.5	MS14X8X4.5W

Discontinued Type No.	Substitution (recommend)
MB15X10X4.5	MS15X10X4.5W
MB18X12X4.5	MS18X12X4.5W
MB21X14X4.5	MS21X14X4.5W
MS8X7X4.5W	(MS10X7X4.5W)
MS9X7X4.5W	(MS10X7X4.5W)
MS10X6X4.5W	(MS10X7X4.5W)
MT10X6.5W	MT10X7X4.5W
SA4.5X4X3	AB5x4x3DY
SA5X4X3	AB5x4x3DY
SA7X6X4.5	(SS7X4X3W)
SA8X6X4.5	(SS10X7X4.5W)
SA10X6X4.5	(SS10X7X4.5W)
SA14X8X4.5	SS14X8X4.5W
AB3X2X6W	(AB4X2X4.5W)

### Attention :

Same or similar core size items are listed up for substitution. Magnetic or electric characteristics are changeable. Please test substitution parts before replacing to ensure performance.  
Wired parts made by these cores are also discontinued items.

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